

Lister Sinclair

I'm Lister Sinclair and this is *Ideas* with Part 6 of "The Education Debates," a series of programs by David Cayley about the state of our schools and universities. Tonight's theme is technology and what it's doing to schools. We'll begin with a look at what retired teacher Bob Davis calls "skills mania," and hear why he thinks it's undermining the habits of citizenship that education was once expected to form. Then we'll turn to Marita Moll of the Canadian Teachers Federation and her critique of the rush to get computers into schools and the increasing dependency of schools on corporate partners. And finally, we will shift fields, and explore the possible benefits of computers in schools, as Professor Carl Bereiter describes how they can help in the creation of what he calls "knowledge-building communities." "The Education Debates," Part 6, by David Cayley.

David Cayley

American writer Neil Postman has invented a word to describe the unprecedented condition in which we live. Fusing the words "monopoly" and "technology," he calls it "technopoly." Postman recognizes, of course, that tools have always dictated to their users, to some extent. From the mechanical clock to the light bulb, technology has always influenced social organization, but he argues that we are now living in something radically new, a society in which techniques nakedly rule human purposes. If networked computers allow billions of dollars to slosh recklessly around in world money markets, then so it must be. "There is no alternative," is the endlessly repeated motto of technopoly.

This new order is now exerting a powerful influence on Canada's schools. Schools have always been asked to prepare people for whatever future is currently foreseen, and at the moment, this future is imagined in the various guises of technopoly: the global market, the information age, the multi-job career and so on. The kind of education that is seen as necessary to get along in this new world is summed up in the word "skills." And so tonight's program begins with an analysis of this new account of education. Retired teacher Bob Davis has written a not-yet-published book about it called Mentally Skilled, but Mindless: Skills Mania in our High School. Davis began his career as a history teacher in a Toronto high school in the early 1960s. He went on to co-found a celebrated free school called The Everdale Place, and then in the '70s, returned to teaching high school in Scarborough, where he taught until his retirement a few years ago. He has edited two highly-regarded education magazines, Mud Pie and This Magazine Is About Schools, and written several books on education, including What Our High Schools Could Be and The Prodigal Teacher.

Throughout his career, Davis has been active on the political left, but admits to a Tory side as well. Here, he begins his analysis with a precis of the argument he opposes: the argument that new social and economic conditions demand a new focus on skills in education.

Bob Davis

We educators, to respond to this properly, should not be teaching people content anymore, because it goes obsolete too fast. And we should not be teaching manual skills because there are not many tool-and-die makers left. We should move to teaching portable thinking skills that can be used in many jobs. You've heard the story that nowadays we're going to have to change our job eight or ten times, but the next one can be as interesting as the last, if we have the proper portable skills to do it. That's what the school's supposed to do. And, yes, industry should be teaching some of the specialized parts of this, but somehow we can be teaching the general skills. Take my subject, for example, history. It's not important to learn the content of history but just how to do history. And then if you need to do it sometime, you will have learned how to. So the emphasis is not on how this

will help us as citizens to understand our society and its past and what its future could be. It's, we're learning how to do it, if we need to do it. And this is shot through the whole of this new conventional wisdom in education. You see it in the language, the proliferation of the use of the word "skill": parenting skills, reading skills, reading-readiness skills, coping skills, life skills. That's one of the favourite ones. And one thing we find out with life skills, as we look at it a little more closely, is that it's really for the lowest stream. It means learning how to fill in forms and.

My job, in the last four or five years, has been to analyze what this is all about, this change, this playing down of knowledge and this playing up of skills. And it's got to the point where I think it's out of hand. That's why I call it "skills mania." And what does it leave out? It leaves out the mind. Mentally skilled but mindless. It's using a little piece of the mind, because it's supposed to be mental skills. But the mind, in the sense of the part that is you and your feelings and your place in the community and the part of you that might change your situation for the better, is not really taken seriously. The way I put it is, the skills aren't anchored. I'll give you an example: I've been teaching as a part-timer at York for the last 15 years, and I had a presentation, a number of years ago, by a day-care worker who had taken the ECE course at a community college.

David Cayley

Early Childhood Education?

Bob Davis

That's right. And she said, "My job as a day-care worker is to teach these little kids motor skills, listening skills, communication skills and cognitive skills." And this got me going, trying to organize my thoughts on this topic, because I thought, well, now, this is a young woman who was brought up in a Catholic-Portuguese home, and this is not the language her mother would use. But I thought, after a while, that she probably was translating a lot of that other language into this new language. I asked her, "Did you learn that at the Early Childhood Education courses?" And she said "Yes," but she said, "But I believe in it myself." Now, her mother might have said, "I want a place to leave children where they're happy or they're taught to be fair to each other or they co-operate." So what is the advantage of calling them "skills"? It takes this heaviness out of them, and it's as if they're objective, as if they're just a technical thing. But I say, at some point, skills stop, and purpose and commitment take over — and content. And these things are not obsolete. And, we have to admit, we've messed up in the past, we've made people memorize all sorts of things that were just rote learning. But we had something, too. That's my Tory side, that to learn about the meaning of life and the meaning of self and the meaning of commitment and the meaning of change in society, these were very central to education, and still should be.

David Cayley

Skills, in Davis's view, float somewhere above these fundamental questions, obscuring them from view. Sometimes also called literacies, as in media literacy or computer literacy, skills are disembedded from any particular way of life. They are unanchored, Davis says. Defining education as the acquisition of skills tends to deflect attention away from questions about what is good or what deserves our loyalty. Davis finds an example in a subject about which he has written a book called Whatever Happened to Canadian History? When he began teaching in the early '60s, the high school history curriculum gave a coherent account of what it meant to be Canadian, stressing the Western heritage, both Christian and classical, the British heritage and our destiny as a New World people. The intention was not to teach history skills, but to show Canadians what was good about their inheritance and why they ought to be loyal subjects, obedient to the laws and willing, if

necessary, to defend their country's interests in war. Davis wanted to see this history taught in a more inclusive, less triumphalist vein, but instead, he says, it disappeared altogether, with no replacement.

Bob Davis

When I started, you had to take it every year from Grade 9 to 12. All students. And if you were planning to do a B.A. program, you had to take it in 13 too, so there was five years, compulsory. By ten years later, it was down to one compulsory, and this was quite a shock to me, because I was part of the group that was saying, hey, we totally believe in compulsory history every year, but we think that you've left out a lot. There's not much history of women here, and how about native people — they get really ignored — labour history and social history et cetera? We thought we were on the wave of change, and a lot of little books on these subjects were published. They didn't change the central textbooks very much. They put in one woman besides Florence Nightingale, and they added the Winnipeg General Strike and had a black face on page 432. But what we were looking for was well-acknowledged by major publishers, by the sprouting of a lot of small books on these topics.

By '71, the agenda was totally different. The way I put it is, we thought we were playing hockey, and the game was Pacman. History itself was not thought, with the new world of the information age, to be as important anymore. During the same period, the importance of math and English has actually grown, which to me is the greater proof of what I'm saying here. To use the old language of the "queen of the sciences," the queens — plural — are math and language, not English, language. Because you see everything else through them. You don't see things through religion or, as someone said in the 19th century, history. You see through the techniques that will unfold the other subjects. So math and language need to be central. Well, that's really what we were hit with, and we haven't recovered since.

David Cayley

One of the justifications formerly given for an extensive study of history was its contribution to citizenship. This justification applied as much to the revised curriculum Bob Davis favoured as it did to the elite version of history that dominated the official curriculum. In either case, knowledge of history was seen as a way of anchoring and orienting civic participation. The new emphasis on skills fits a society on which the past no longer has much hold. Incessant competition and incessant change are said to be the new reality, a reality that will demand a generation of workers capable of continuous re-adjustment. Schools must therefore foster not, as of old, settled reverences and loyalties but adaptability, effectiveness and a capacity for constant re-attunement to new techniques and new values. This view is now being vigorously promoted, Davis says, by the organs of Canada's business class.

Bob Davis

The most enthusiastic spokespeople for this tend to be groups like the Conference Board of Canada. And I see a bit of irony here in the fact that a group like that, made up of the CEOs of the biggest corporations in Canada, recommends a really extravagant skills emphasis for Canadian schools, but probably sends its own children to Upper Canada College and Havergal, where they get the liberal arts, not skills. They're not really worried, with their own children, that the skills that they're talking about will be picked up, and they're glad to have them learn some history and some literature.

So I think it is something that has come into its own in the development of information global capitalism. That kind of capitalism is at the centre of wanting workers who are experts at particular things and particular skills, but who aren't going to have a lot of ideas about a good society. In other

words, a dimension which is so big for me in education, which is creating a citizenry that's informed, is not part of this technique. I've studied teacher magazines, and the word "citizenship" fell into dis-use because it was thought to be corny and blah and so on. What came in was political education, and so you're supposed to learn now, when an election comes, what's the NDP about, what are the Liberals about, what are the Tories about? And I think, if you have a teacher that has deep convictions, you get some of the good part of the old style. But if you don't, if you just get the skills method, what you're getting is how to see through everything and owe allegiance to nothing. Because it's a technique of analyzing everything, and you're not supposed to learn in school anything about what's worth believing or voting for. The same is true of media analysis, which is how to see through how all the shows are biased for this and that reason. But what the hell is worth believing is not on the agenda, the official agenda, anymore. And if you're a certain kind of right-winger, you think, well, it shouldn't be, that's the parents' job. But is that really what we want, to see through everything and owe allegiance to nothing? The corporations like this approach because once you've seen through everything, it seems better to stay with the bad you know than to risk the worse that you don't know. I think that's deeply the attitude of many voters, especially those that don't vote. You can't do anything about it, so it's not worth voting. But you're real smart. You can see through everything, because you've got the skills of analysis, and I just don't think that's enough.

David Cayley

Behind the new stress on skills training in schools, Bob Davis sees corporate demands for a certain type of employee: able, agreeable and content not to look behind the sparkling facade of the new capitalism. Marita Moll, of the Canadian Teachers Federation, says that another vehicle for relating schools more closely to the corporate world has been the promotion of computers in education. She's just edited a book of essays called Tech High, which examines the impact of new technology on schools. In it, she and her co-authors argue that the rush to get computers into schools and schools connected to the Internet have made these schools increasingly dependent on corporate partners, as they're called. The story goes back to 1994, when a now largely discarded expression, "the information highway," was on everyone's lips. In the U.S., Vice-President Al Gore made a dramatic pledge to run this highway through all schools, hospitals and libraries. In Canada, the Department of Industry set up a Schoolnet to oversee and encourage the computerization and networking of schools. The board of directors included a number of large computer and communications companies. No clear distinction was drawn between the public good and the private. The consequence, according to Marita Moll, has been increasingly close links between schools and corporations.

Marita Moll

I think that Schoolnet has had a very large role in promoting partnerships between schools and businesses, and, I have been involved in it right from the very beginning. That was an open and expressed mandate. But I don't think people really realized at the time just how deeply this would go into the school culture. And now we're faced with schools which are dependent on private funds for what are seen to be crucial educational resources. A lot of this has to do with rhetoric and PR, and certainly the industries could see that this was a good way for them to have good PR in the community, and they used it in that way. I really feel that an awful lot of what's happening right now is rhetoric becoming reality. It began with the promotion of the whole idea that you could have these partnerships between local schools and large international companies, which is a difficulty from the beginning because that is not really a partnership, and schools would certainly be very much a junior

partner in anything like that. At the moment, we have a lot of industries and businesses which have supported and donated equipment to schools, and Schoolnet has fostered and facilitated that sort of thing and certainly built up the rhetoric around it. But the schools don't have the resources to maintain or keep up that equipment and certainly not to constantly turn it around like you have to with high-tech equipment every two or three years. So we're getting caught on a treadmill here that basically erodes a lot of the public nature of public education in that public things are usually publicly funded.

David Cayley

The private funding of public education has now reached the point where one Mississauga school, Gordon Graydon Memorial, boasts 78 separate partnerships with corporations, and is said by Ontario's Ministry of Education and Training to be "the model we're building towards." Marita Moll's colleague, Heather Jane Robertson, has written about partnerships in her recently published No More Teachers, No More Books. She quotes the Conference Board of Canada's estimate that there are now some 20,000 such arrangements across the country. These deals can range from cash payments for services, like allowing Campbell's to taste-test their soups on students, to *quid pro quo* arrangements, like accepting Apple computers in exchange for becoming a display, advertising and research site. They may also include sponsorship of some part of the school's program or the provision of free curriculum materials carrying advertising. One of the problems with these arrangements, in Marita Moll's view, is that they make the schools dependent. Companies that provide free services to schools often stay to provide paid services, just as taverns once offered free lunch to keep their patrons drinking. It's good business. But in Marita Moll's opinion, it's a bad bargain for schools.

Marita Moll

Industry Minister John Manley has now asked private industry to roll out 250,000 computers that they maybe are replacing and to give them to schools and community centres. So we're talking large numbers. I would suggest that these computers that are being donated to schools are not necessarily gifts in that a whole lot of strings remain tied to them after they are dumped into a classroom. And the costs that are associated with them are much bigger than the original cost of getting a computer, whether you got it free or you paid a thousand dollars for it.

David Cayley

How so?

Marita Moll

Well, all industry people agree that 85 per cent of the cost of a computer happens after you buy it. You need to maintain it. You need to have the upgrading. You need the support. You need the wiring. You need the teacher training. There's just an enormous agenda behind it, so just putting that computer in the school is suddenly adding some pretty big costs to that classroom.

David Cayley

Do you believe it has an important educational benefit?

Marita Moll

I believe that good teachers can use all kinds of tools to supplement their teaching. And I think that's true of art. I think it's true of music. I also think it's true of computers. There are lots of teachers out there using computers in exciting ways that kids really like. But, unfortunately, it is becoming the only tool that is being promoted as a good teaching tool. And it's also becoming a tool

— I shouldn't use the word "tool" because it's much more than a tool — but it's becoming the thing through which we deliver the educational services. The curriculum can be delivered that way. So it has a lot of agendas that are difficult to pin down, an awful lot of threads hanging out there around this initiative of connecting schools to the Internet. It's not a simple matter. It has a lot of implications.

David Cayley

These implications deserve careful public study, which, at the moment, they're not getting. The place of computers in defining and delivering the curriculum, the trade-off between computer networks and library resources, the limits to corporate involvement in public education — these are all questions of public policy, but they are currently being decided by default as public responsibilities are quietly passed into private hands. Part of the problem, Marita Moll says, is an artificial sense of haste.

Marita Moll

I think it would be good to slow down. I don't think there's any particular need to rush into this. The technology, the Internet, we've had it — what? — for four, five years. The technology that we use to access it, to put stuff on it, is in its infancy. Our ability to use it, our knowledge about it, is in its infancy. Why are we rushing to put all this stuff into classrooms when it's just barely beginning to become part of our social milieu? I think that we should take our time. We should stop making it a compulsory agenda in schools. We should stop putting it at the top of the agenda of how schools should change. We should slowly let it infiltrate into the classrooms in the way that teachers see fit to use it, if and when. This is how other technologies found their way into the classroom. There was the radio, and there was film, and there were overheads. All of these technologies were originally promoted as things that would change education. They never changed education. But they're all used by teachers in whatever circumstances they see fit. The one thing that's different here, in my estimation, is that we never had, in any of those days, the coming together of the political and economic forces behind this agenda to move it into the schools that we do today. This is what's new, the government-corporate alliance to move it as quickly as possible. And I think that we should be slowing down, saying, wait a minute, we'll put this together, it'll find its way in there in time.

David Cayley

It's easy to understand why companies that sell and service computers and computer networks are interested in generating an atmosphere of urgency around their products. But why have educators co-operated? One of the reasons, Marita Moll thinks, is that competence with computers has become such a powerful signifier of readiness to compete in the new economy.

Marita Moll

Parents are afraid for their children's future. And, in fact, when I talk to educators about the need to slow down in pushing this stuff in the classrooms, they say, well, talk to the parents. Parents feel that there's a real need for this stuff to be in there. And I think that, in fact, everyone should take a closer look at what the future world is most likely to look like from what we know, standing right here, right now. And I think that the high-tech jobs that we're all being told that we have to educate everyone for are simply not there on a large scale. We're talking about a job market that's more de-skilled than up-skilled. How much high-tech education does it take to pass something with a bar code across a scanner at the supermarket? Or how much high-tech education does it take to be part of a call centre. There's a lot of that kind of work developing. So whether it's the really high-tech skills we need in the education system or it's more general education and more humanistic

education, I think that's a very open question. If people look carefully, the high-tech jobs are not really the ones that most people are going to fall into. But it's the thought of the high-tech jobs that is driving the computer agenda in the parents' minds, I think. Those jobs are not there. They're talking about 10,000 jobs in Canada perhaps, the really big high-tech jobs. And we don't want to restructure the entire education system to serve that. In fact, I was at a meeting the other day, and this was a meeting of software development people who actually said, well, yeah, there's about 10,000 jobs, but the biggest job market right now is in truck drivers. Hardly anyone knows that there's a huge demand for truck drivers. Should we should restructure the school system for that? There's an imbalance in the rhetoric and the information that's getting to people. This is partly because there are large powers that have the money and the resources to put out this information and there are many people who have information but lack the resources to get it into the public domain. So there's a big imbalance of information about the future and what kind of education might best serve the future.

David Cayley

Marita Moll has argued that there's a lot of hype, superstition and corporate self-interest involved in the computerization of schools. But as she's acknowledged, this does not necessarily mean that computers have no use in education. The remainder of the program is devoted to an account of how computers can make a difference by turning classrooms into what Carl Bereiter calls "knowledge-building communities." Bereiter is a professor at the Ontario Institute for Studies in Education and one of the creators of the Computer-Supported Intentional Learning Environment or CSILE for short. CSILE is a classroom computer network that enables students to collaborate in defining and pursuing their own inquiries, rather than just engaging in the artificial tasks that have typically constituted school work, for Bereiter, a potentially revolutionary change in the character of schools. Work began on CSILE in one Toronto classroom in the 1980s and is now being carried on worldwide.

One of the origins of this approach was in some research on writing done by Carl Bereiter and his wife and colleague, Marlene Scardamalia. They conceived writing as an interchange between what they called a "content space," in which problems of knowledge and belief are worked out, and a "rhetorical space," in which problems of presentation are dealt with. Skillful writers, they discovered, translated problems arising in one space into problems to be solved in the other, so that thinking through difficulties in presentation clarified the writer's knowledge, and thinking through problems in knowledge clarified the writer's rhetoric. When they studied writers who were in school, however, they found that these student writers did not proceed in this way. The students merely told or repeated knowledge without any sign that the act of writing had produced further critical reflection about what was being said. They wrote on assignment, to a schedule, without themselves becoming engaged in the process. The question that this raised for Carl Bereiter was, how could schools be brought to foster real knowledge-building and not just the carrying out of *pro forma* activities?

Carl Bereiter

Activities dominate educational thought. Knowledge is a by-product. And we wanted to find ways to get the kids to actively work with knowledge, and the way to do it seemed to be to start solving knowledge problems. But then in order to bring about that kind of shift, it seemed necessary to change the pattern of discourse in the school, in which everything's being processed through the teacher. I don't mean just the teacher's dishing the knowledge. The teacher may be leading a

Socratic dialogue, the teacher may be managing a free-for-all discussion, but everything still passes through the teacher. This is standard in progressive classrooms, open classrooms and conventional ones. As long as you have that star pattern, you're not going to have a very good way for kids to get engaged in the sort of construction of knowledge that goes on in a scientific research group, let's say, or in an innovative business.

So two things seemed to be needed. One was to look for ways to bring the kids themselves into contact with their own knowledge, and the other was to change the discourse pattern in school so that it was more like discourse in the real world, where a network of communication existed instead of a star pattern, where everything comes to one person and then goes out from that person to others.

David Cayley

Recognition that the teacher is a bottleneck in the flow of classroom discourse became one of the starting points for Bereiter and his colleagues in their attempts to turn the classroom into a learning community. Another starting point was research he had done on people he called "expert learners." Observing such people in the fields of both music and medicine, he concluded that their essential attribute was their ability to continually expand the scope of the problems they were addressing.

Carl Bereiter

What kept showing up, again and again, was that the expert learners treat learning as a problem. "What's the problem I'm trying to solve?" And it's solving the problem that then produces learning. But the consequence of solving it is usually then to be able to solve a more complex problem, often the same problem now seen at a higher level, so that you get this escalation of problems. We call it "progressive problem solving." And once you see that, then you can start looking down, and you see progressive problem solvers, even down at the level of elementary school kids, where, to some of them, a new piece of information creates a problem, and, for others, it's just a new piece of information. We'd tell little kids, for instance, "Germs aren't really trying to hurt you, they just want to live in your body and eat and make more germs." Well, this flies in the face of virtually everything kids learn from watching commercials and cartoons and listening to their parents say, "Don't put that in your mouth." I mean, germs are sinister things. When we tried this out on groups of kids, we got a range of responses. Some really wouldn't hear what you were saying. They'd just go on as if you hadn't said anything at all, talking about how germs are bad. They were assimilating what you said to what they thought you should be saying, and heard it that way. Then you got some in the middle who understood what you had said. They could paraphrase it, but they didn't see it as contrary to what they already believed. And then really a small minority of kids would just suddenly wake up to it and say, "Well, that's not my idea of a germ," or, "This is amazing. We think they're bad, but the germs don't. I wonder if germs are intelligent." I mean, they're off and running on problems of that kind. And that's the kind of thing that we wanted to stimulate in school and to give the kids a chance to run with those questions, so that if they start getting interested in, "What are those germs doing inside a body? What's the life of a germ like?" that they could pursue that and work on it with others and go somewhere with it. So that's what led us to finally resorting to developing a computer-based environment that would allow a different kind of discourse to go on that would, in fact, allow kids a chance, within the confines of schooling, to pursue questions like that and actually go somewhere with them.

David Cayley

What the computers provided was a medium in which the kids could work. Carl Bereiter and his colleagues working with senior elementary school students created a classroom network of

homegrown Icon computers. This enabled the students to create a database in which all contributions were accessible to all other users, in other words, a public, written conversation. It allowed students to put forward real questions and then to try collaboratively to advance on those questions.

Carl Bereiter

When they ask a question, they already have something like an answer. They're not starting from a hole in the head. They're starting from something that's there. So we try to get them to state their theory and then ask the question: what would I need to understand in order to improve my theory and advance on the problem? That's been just an amazing turnaround. The whole world now in educational reform is getting on to the idea that kids' questions should drive their inquiry. We did some research that indicated that kids' questions are wonderful, and they ask these very deep and provocative questions, provided they don't have to find the answer. As soon as they know they're going to have to go out and find an answer to the questions, they start asking the kinds of questions that they know are going to be answered in the book. So we had to find a way around that and eventually got to this notion that what matters is not finding answers to questions, it's improving your initial theory. And you can always do that. You may wonder, how does the brain control the eye? You may not get to an answer to the question, but you could certainly find out things that will improve on what you understand now about that. And so what might have been a forbidding task for kids turns out to be an appealing one that gives them a sense of accomplishment. And interestingly enough, it's the way science works. Scientists aren't getting closer to the truth. They're continually improving on what they already know. To get closer to the truth, you have to already know what the truth is in order to judge that.

David Cayley

In Computer-Supported Intentional Learning Environments, Bereiter says, elementary school students can proceed in the same fashion as a real scientific community. In effect, they are a real scientific community. Students contribute to the developing database by posting notes, which may take the form of questions, plans for further inquiry, reports on research or statements of what an individual currently knows. Notes that make a distinctive contribution to the knowledge base are advanced to a special published status, just as they would be in a learned discipline.

Carl Bereiter

Not everything you would do in the way of notes is anything like a finished piece of information. So notes can be promoted to published status, and some procedure gets set up in the classroom for that. Either the teacher checks them out and approves them, or, more often, there's some procedure where the kids do the initial checking-out, getting something good, and the teacher does the final pass on it. So you have a sub-set of notes now that are ones that are meant to be taken more seriously and have some kind of reliability that others can make use of the information.

David Cayley

Procedures like peer review make learning in CSILE classrooms a more social enterprise than is normally the case in schools. This has a number of interesting consequences. One is that there is no longer a single stage or a single spotlight in the classroom. This means, Bereiter says, that there is less jockeying for position and less likelihood that a few aggressively knowledgeable students will dominate classroom discourse. It's often been noticed that students who come to school willing to co-operate and work in groups later develop serious reservations. The things that make them retreat include, in Bereiter's own words, "rivalries and domination, the suppression of novel ideas,

time-wasting and the plain nastiness that often infects pre-adolescent social relations." CSILE goes some way to getting around these problems. Communicating through a public, written medium, Bereiter has written, does much to encourage a higher level of civility. Constructive criticism is the essence of what is going on, and this makes it easier for teachers to foster a certain etiquette in the phrasing of notes. Another important facet of CSILE is the particular way in which it has taken advantage of the unique capabilities of the microcomputer. The CSILE approach, Bereiter says, differs markedly from the usual way of using computers in schools.

Carl Bereiter

Where I think there's a significant contrast is between our use of a computer environment and the multitude of uses that go by the name of "project-based learning." What project-based learning with computers often amounts to is producing a multi-media document. Now, the kids we work with produce multi-media documents too. They do fantastic graphics, and as we enhance it, they'll be putting in video and so on. So it's not the media that's the problem. It's again, where's the focus? Is it on producing the document? If so, what you're learning is how to produce multi-media documents. Or is it on the knowledge? Is it on understanding the circulatory system, or is it on producing a bang-up show of some sort about it that has a heart pumping away? The distinction between the two isn't very clear out in the educational marketplace. The great bulk of what's going on, with fancy uses of computers, would count as "project-based learning," but the emphasis is on the project, the thing that's going to be produced. And we're doing everything we can to move the emphasis the other way, to have the kids focussed on learning or on whatever the knowledge problem is that they're working on.

One of the most dramatic episodes to come out of any CSILE classroom came from a school in Iowa where the kids themselves undertook to start amassing their knowledge about growth: what makes it start, what makes it stop and so on. These are kids on the cusp of adolescence, and so it's a big issue to them. And it started out largely dealing with these personally relevant issues, but then they got on to the science of the thing, what really does make you stop growing. And it was spread over three months, and there were 270-some notes that they contributed. And the only reason it stopped then was that school was over for the year, and they wanted to start again in the fall. But there was no tangible product whatsoever other than the notes themselves. No poster, no multi-media document, no getting up in front of the class and saying what you'd learned or anything. And yet, I think anyone who reads that stuff would say this was a remarkable educational experience for these kids. And what's more, they knew it was. They were tremendously pleased with themselves for what they'd accomplished. And it was all knowledge. There was no project.

David Cayley

The project, to Bereiter, symbolizes everything that is artificial about school work. In getting past the project, the activity, the assigned topic, Bereiter thinks that CSILE can make schools more hospitable to a genuine pursuit of knowledge. At the moment, he says, they too often defeat real inquiry.

Carl Bereiter

What you find, unfortunately, is a lot of conditions in the nature of schooling that may convince kids that it doesn't pay to try to understand. The army used to have a slogan along that line that said, there are three ways to do everything: the right way, the wrong way and the army way. And you shouldn't question the army way. Just do it. Don't try to understand why because usually there isn't any reason. Well, there's some of that in every institution, and, unfortunately, schools have some of that: the emphasis on getting things done on time, of having things appear neat and so on — all of

which have their justifications. I'm not opposed to them. But they tend to all fit together into a system in which understanding doesn't turn out to be a high priority. And it's not a simple matter of teachers stressing rote learning or the tests only testing that and so on. There may be such factors, but it's the whole system that tends to militate against understanding as a priority. And that's why we have to change things like the structure of discourse, how the information flows in a classroom and so on. Because all of those are parts of what conspire, I think, to discourage thinking in an environment where it's supposed to be highly prized and, even more, to devalue knowledge in an institution that's supposed to be dedicated to it.

David Cayley

Bereiter believes that Computer-Supported Intentional Learning Environments have begun to address this central problem by showing that knowledge-building is a feasible objective for schools. In this sense, he says finally, CSILE offers a way of moving education beyond what he calls its schizophrenia. For a long time, advocates of didactic instruction have competed with proponents of more child-centred methods for control of public education. In Bereiter's view, neither of these approaches by itself is entirely satisfactory, and, moreover, there is no practical way to settle their endless dispute. What CSILE has begun to provide, he says, is a compelling new objective that can potentially break this ideological logjam.

Carl Bereiter

I don't see any way that the polarity, however you want to characterize it, in education is going to be resolved without the emergence of some new objectives, some new things, that are seen as attainable and recognized as desirable by everybody. Because what we have is a battle of methods, not of objectives. And the back-to-basics side is going to continue to insist on the demonstration of results, and the progressive side, if you want to call it by its oldest name, keeps pressing for methods that are justified on largely philosophical grounds. Originally, on grounds of their being democratic; now on grounds of their being more in tune with the child's nature and so on. Those two aren't going to get together. But if we can show a new kind of outcome that everybody would agree is really important to strive for, we might get off of this infatuation with testing very low-level skills, which is part of the unresolvable controversy.

Ralph Tyler, who was the dean of educational evaluators — he died not too long ago at an age beyond 90 — was responsible, more than almost anyone else, for the shape that educational evaluation has taken. And I was at a meeting once where a number of educators were getting up and complaining about the back-to-basics demands of business and of politicians and how they were making real educational innovation impossible and lamenting the infatuation with tests. And the meeting, interestingly, was taking place at Educational Testing Service, the home of much of that testing. And Ralph Tyler finally got up and said, in his experience, business people and politicians aren't that stuck on tests. It's just, no one has ever offered them an alternative, something else they could recognize as a result that was valuable and worth pursuing. And that's a real challenge, and it's a challenge that I think anyone seriously concerned about educational change has got to face up to. We can't just go on arguing that our method is philosophically better. It will never win out until we can show a superior result, and that's what we've got to aim for.

Lister Sinclair

On *Ideas* tonight, you heard Part 6 of "The Education Debates," by David Cayley. Our series continues tomorrow night with a program that looks back to the 1960s and the radical critiques of

education that originated in that decade.